

What is claimed is:

1. A method of press-working an inorganic substrate, comprising disposing a combination set of laminating materials including an inorganic substrate made of a semiconductor substrate or ceramic and auxiliary materials for a laminate working between upper and lower heat plates of a vacuum press machine and heating and pressurizing the combination set,

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10 wherein the vacuum press machine comprises as a pressurization system an air cylinder which drives a plunger by means of air pressure and, the upper and lower heat plates which have been heated up to a predetermined temperature are brought into contact with the combination set disposed between the heat plates after or before the initiation of pressure reduction of a press atmosphere or at a reduced pressure and then a low-pressure loading from the initiation of the pressurization to 0.05 MPa takes at least 10 seconds at the reduced pressure.

- 20 2. A method of press-working an inorganic substrate according to claim 1, wherein the vacuum press machine has the air cylinder above the upper heat plate and the upper heat plate descends due to its own weight with the aid of damper function of the air cylinder and is slowly brought into contact with the combination set.

- 25 3. A method of press-working an inorganic substrate according to claim 1, wherein the pressure loading is carried out by increasing the pressure up to a predetermined pressure in the range of from 0.05 to 5 MPa after the low pressure loading and maintaining the predetermined pressure.

- 30 4. A method of press-working an inorganic substrate

according to claim 1, wherein, when the laminating materials are a semiconductor substrate (SE), a holding substrate (BP) and a thermoplastic resin (TP) which is disposed between the semiconductor substrate (SE) and the holding substrate (BP) and which the semiconductor substrate (SE) and the holding substrate (BP) are bonded with, the auxiliary materials are at least a laminating material positioning frame or a laminating material positioning die for disposing the laminating materials on the lower heat plate through a cushion material.

5. A method of press-working an inorganic substrate according to claim 1, wherein, when the laminating materials are a resin-impregnated ceramic substrate and a metal foil, the auxiliary materials are at least a laminating material positioning frame including a continuously porous material which laminating material positioning frame disposes the laminating materials on the lower heat plate through a cushion material and a metal plate, has an initial thickness thicker than the thickness of the laminating materials and absorbs an excess resin.

6. A press machine comprising as essential components staybars, upper and lower frames, upper and lower heat plates, means for heating the upper and lower heat plates, pressure loading means to the upper and lower heat plates and a sealed pot having the sealing function of reducing a pressure in an atmosphere between the upper and lower heat plates, wherein the pressure loading means is an air cylinder supported and fixed on the upper portion of the upper frame, the air cylinder can control a plunger under a low pressure of 0.02 MPa or lower, the upper heat plate is connected to the shaft of the plunger

and, when the upper heat plate descends, the air cylinder works as an air damper.

7. A press machine according to claim 6, the air cylinder
- 5 is a two-level air cylinder switchable between a low pressure and a high pressure.

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